Amsterdam UMC

IMPROVING HEALTH

CIRCLE OF LIFE

AMSTERDAM REPRODUCTION AND DEVELOPMENT

ANNUAL REPORT 2025

2025

REPRODUCTION

SOCIETAL IMPACT

DEVELOPMENT

RESEARCH

Contents

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is a research institute of Amsterdam UMC.

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A word from the director

It is with great pride and enthusiasm that we present the 2025 Annual Report of the Amsterdam Reproduction & Development (AR&D) research institute. This past year has once again showcased the dedication, innovation, and transdisciplinary teamwork that define our institute and drive our mission to improve health from preconception to adulthood.

The year 2025 was a pivotal one, guided by our theme "Shaping Tomorrow's Health Today." Within these pages, you will find highlights of the impactful research conducted across our core areas—from utilizing artificial intelligence for the early detection of infectious diseases in our most vulnerable neonates to pioneering investigator-initiated trials for ultra-rare conditions like Fibrodysplasia Ossificans Progressiva. But beyond the fundamental and clinical science itself, 2025 was the year we truly embedded valorization into our daily practice. We are immensely proud of the numerous AR&D researchers recognized for translating their work into societal value, including the recipients of the Amsterdam Impact Award, the Amsterdam UMC Societal Impact Award, and the UvA Fonds Impact Call. These accolades underscore our shared commitment to ensuring our scientific insights deliver tangible solutions for patients, policymakers, and society at large.

This year also marked an important transition for our institute's leadership, as we officially welcomed Martijn Oudijk as co-director in May 2025. Together, we are honored to support such a dynamic, engaged, and forward-thinking community of scientists, clinicians, and support staff.

Looking ahead to 2026, we are filled with renewed energy to sharpen our strategic focus. Moving forward, AR&D will increasingly center its efforts on the profound relationship between early human development and future, lifelong health. Science clearly shows that the foundations of health are laid very early in life, and our institute is uniquely positioned to explore and optimize this critical window. This specific research profile aligns perfectly with Amsterdam UMC's overarching multi-year strategy, "A Healthy Future for All." By continuing to bridge the gap between early development and long-term well-being, we aim to support and improve a thriving research environment that ultimately contributes to a better healthcare system and broader societal health for both current and future generations.

This is a true team effort, and together, we are ready to take on the challenges and opportunities that await.

Sebastiaan Mastenbroek & Martijn Oudijk
Directors of Amsterdam Reproduction & Development

Starting the Circle of life

WHERE A HEALTHY FUTURE STARTS

The Amsterdam Reproduction and Development (AR&D) research institute was established in recognition of the fundamental importance of reproduction and development as the foundation for health across the human lifespan. As the Netherlands' sole academic medical center research institute singularly focused on this vital field, AR&D occupies a unique position within Amsterdam UMC. It serves as a collaborative network connecting researchers from the former VU University Medical Center and Academic Medical Center, as well as affiliates from both the Vrije Universiteit Amsterdam and the University of Amsterdam. AR&D is one of Amsterdam UMC's eight distinguished research institutes.

Our work is organized around the interconnected stages of the human life cycle, covering four key research areas: preconception and conception, embryonic and fetal development, pregnancy and birth, and child development. We bring together a diverse community of scientists, clinicians, and specialists from various backgrounds, including basic researchers, epidemiologists, psychologists, social and behavioral researchers, and clinical laboratory specialists. Our affiliates are active in both clinical care and research, employing a wide range of methodologies from basic science to translational, clinical, and public health research. This diversity strengthens scientific excellence and fosters the translation of new discoveries into clinical application and societal impact.

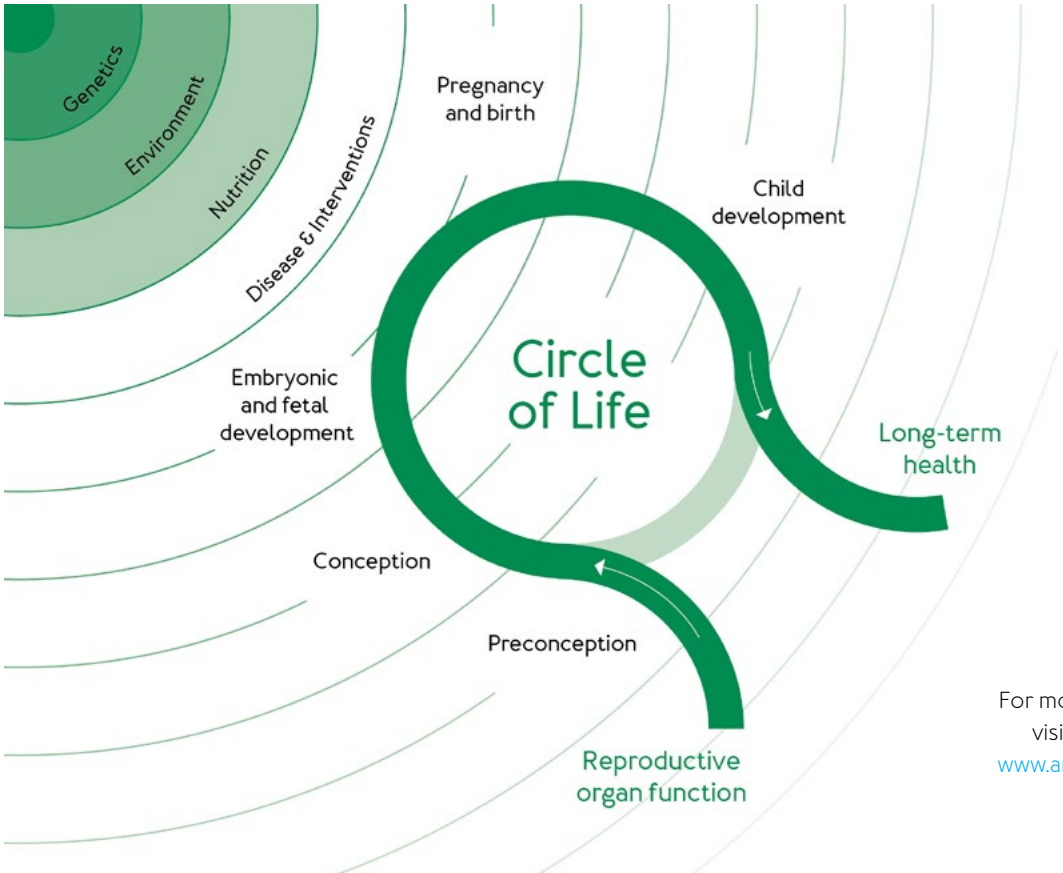
MISSION

Our ambition is to push the boundaries of knowledge in all aspects of human reproduction and development. Through interdisciplinary team science, we aim to improve the health of current and future generations, from preconception to adulthood.

VISION

We envision a world where health improvement is continuous, sustainable, and accessible to all. Serving as a guiding knowledge hub, we aspire to lead at the forefront of fundamental, translational, and clinical science, ensuring that our research on the earliest stages of life actively serves society.

Strategically, we are committed to stimulating cutting-edge transdisciplinary research and translating scientific findings into policy and practice through valorization, aiming to address serious challenges faced by society today. We actively support our researchers through initiatives like seed funding, networking events, and skill-building activities, leveraging unique resources such as our biobanks and cohorts to fuel scientific discovery.



For more information please visit the website of AR&D: www.amsterdamumc.org/ard.

AR&D and society

VALORIZATION AND IMPACT: CREATING VALUE FOR SOCIETY

At AR&D we are committed to advancing scientific knowledge and ensuring that our generated knowledge and expertise contribute to the health of current and future generations through effective translation of research insights into societal impact. Valorization is therefore an integral part of our work. In a world facing complex health challenges, it ensures our academic research delivers tangible solutions, connects researchers with clinicians, policymakers, industry partners, and civil society, and creates opportunities for collaboration, innovation, and funding while increasing the visibility and relevance of our research within and beyond academia.

This commitment aligns directly with Amsterdam UMC's strategy "A Healthy Future for All," launched in early 2025, in which valorization is firmly anchored as the fourth core task alongside patient care, research, and education. Nevertheless, the concept of valorization, its importance, and the variety of valorization strategies to create impact require a more targeted approach to raise awareness and build understanding and knowledge among AR&D researchers.

In last year's annual report, we therefore introduced a dedicated chapter on Valorization and Impact to explain what valorization means, why it matters, and how AR&D is working to strengthen its societal relevance. Building on that first step, this year we continue the story by showing how valorization is becoming more and more embedded in our institute's activities, support structures, research culture, and the DNA of our affiliates.

AR&D AND VALORIZATION IN 2025

In 2025, AR&D's research theme focused on how science can benefit society and support the health of future generations. Around this theme several events were organized including the AR&D Symposium and AR&D Retreat, titled "Shaping Tomorrow's Health Today" and "PrepAR&D for Future Generations", respectively. The content of these events aligned seamlessly with our institute's maturing valorization efforts, framing research as a direct pathway to long-term societal health benefits. A round Table Discussion with national and international researchers, leadership, policymakers, and other experts held on the day of the symposium reinforced this by jointly exploring priorities, identifying barriers, and formulating concrete ideas to strengthen support, collaboration, and visibility around valorization and creating societal impact. In addition, the symposium showcased the societal relevance of AR&D by highlighting real-world solutions for patients and society presented by AR&D researchers, and a special workshop titled "Valorization: From Knowledge to Impact" was offered during the annual retreat, with the aim of embedding practical application strategies within our research culture.

Several AR&D researchers received public recognition for their societal impact and valorization efforts in 2025.

- Erik Sistermans and Tessa Roseboom were honored with the Amsterdam Impact Award 2025 for their work in the categories Health and Society, respectively.
- Luc van Lonkhuijzen and Stijn Mom received

the Amsterdam UMC Societal Impact Award for their contributions to the prevention of cervical cancer and for increasing HPV vaccination rates, screening participation, and broader prevention efforts, such as discouraging smoking.
- Marissa Harmsen and Jana Runze received the UvA Fonds Impact Call 2025 award for their work on women's health and mental well-being.

During Postdoc Appreciation Week, AR&D highlighted early-career researchers for their societal outreach and impact, which extends beyond the impact of their publications. Their work in the areas of patient education, clinical tools, public engagement, and policy briefs was highlighted - all clear examples of valorization turning research into practical societal value. In addition, several senior AR&D affiliates showcased their valorization efforts and successes at the first Amsterdam UMC Valorisation Festival 2025 to support and motivate other researchers in their valorization efforts and show that valorization is much broader than just economic gain.

Another prominent and successful valorization example in 2025 was that of AR&D's co-director Sebastiaan Mastenbroek. He has played an important role in public communication and media engagement to raise awareness of the societal and policy relevance of reproductive research. Through this visibility and his contributions to the public debate, he helped inform policymakers and contributed to the broader discussion that led to the adaptation of the Dutch embryo law.

VALORIZATION AS DAILY PRACTICE

For the AR&D research grant applications in 2025, researchers were asked for the first time to include a paragraph on the potential impact of their project and how they thought to achieve this, with the aim of raising awareness and promoting understanding and knowledge of valorization among AR&D researchers. In parallel, AR&D supported the further embedding of valorization through communication channels such as newsletters, the website, social media, and events, helping to showcase the many other examples of research with societal relevance in our institute than the ones explicitly named here. All the above illustrate that valorization is evolving from 'a side activity' into the DNA of our institute's daily practice and culture.

"Valorization is evolving from "a side activity" into the DNA of our institute's daily practice and culture."

In 2025 there was also continued support for researchers by Eline van Dulmen-den Broeder, the institute's impact developer, and through IXA-led activities. It was found that an increased number of researchers found their way to AR&D's dedicated impact developer with a wide range of questions. Furthermore, researchers were increasingly engaging Eline at an earlier stage of their research, making it easier to explore adequate pathways for impact and to think strategically about the audiences and applications of their work. In parallel, capacity building remained an important focus. The IXA Learning Path Valorisation and Impact was continued and completed by AR&D researcher Berber Kapitein. In addition, the workshop at the annual retreat "Valorisation: From Knowledge to Impact" aimed to support researchers in developing the skills needed to identify opportunities for societal, clinical and economic impact. By investing in awareness, training and visibility, AR&D aimed to make valorization a more natural and explicit part of the research culture within the institute.

Looking ahead, AR&D will continue to build on this foundation by further strengthening support for researchers, documenting examples of impact more systematically, and implementing the recently finalized institute-specific valorization strategy aligned with AR&D's scientific profile and societal mission.

“Improving health across the lifecycle.”

RESEARCH AT AR&D


“Subtle physiological changes precede clinical signs of infection; predictive data analysis allows us to detect these signals earlier.”

HUGO KOPPENS, ANTON VAN KAAM, DOUWE VISSER AND WES ONLAND

Artificial Intelligence for Early Detection

OF INFECTIOUS DISEASES IN NEONATAL INTENSIVE CARE

Very preterm infants admitted to the neonatal intensive care unit (NICU) are at high risk of severe complications such as late-onset neonatal sepsis (LOS) and necrotizing enterocolitis (NEC). These conditions remain leading causes of morbidity and mortality. Early treatment improves outcomes, yet early clinical signs are often subtle and nonspecific.

Hugo Koppens

Anton van Kaam

Douwe Visser

This research program, conducted within the Department of Neonatology by Prof. Anton van Kaam, Dr. Wes Onland, Dr. Douwe Visser and Hugo Koppens, focuses on improving early detection and risk stratification of infectious diseases in very preterm infants. This broader research line includes analysis of continuously monitored physiological data, alongside evaluation of blood-based biomarkers and breath analysis techniques as early indicators of infection. Within this program, predictive modelling represents one strategy to support earlier recognition. Artificial intelligence (AI) models are used to detect early warning patterns that may improve timely diagnosis and intervention.

THE CLINICAL CHALLENGE

LOS and NEC can progress rapidly, with infection and systemic inflammation leading to clinical deterioration. Delayed recognition increases the risk of severe infection, intestinal damage, neurodevelopmental impairment, and death. Clinicians rely on clinical observation, laboratory testing, microbiological diagnostics, and interpretation of vital signs to diagnose infectious diseases.

NICU patients generate large volumes of continuous high-frequency physiological data, while early biological signals may also be present in blood markers and exhaled breath. Identifying meaningful infection-related patterns within these data streams is complex. Traditional monitoring systems are largely threshold-based and reactive, often signaling when infection is already clinically apparent. A predictive approach that signals increased infection risk before overt deterioration may provide clinically meaningful time gain.

A DATA-DRIVEN APPROACH

Machine learning (ML) models have been developed to recognize subtle physiological changes that precede infectious episodes such as LOS. By analyzing temporal patterns in continuously recorded vital parameters, these ML models generate dynamic risk scores for individual infants.

Wes Onland

> “Earlier detection of neonatal infection may enable more timely treatment and more targeted antibiotic use.”

As part of this research line, we conducted an external validation study assessing the predictive performance of an ML-based early warning model for neonatal sepsis using longitudinal NICU data collected over multiple years. Overall recall was 59 percent with a precision of 10 percent, and sensitivity for severe infectious episodes was 82 percent. The model provided a median time gain of 12 hours before clinical diagnosis, increasing to 18 hours in severe cases. Alarm burden remained acceptable, with 62 percent of infants experiencing no alarm threshold crossings during admission. These findings illustrate the potential of predictive monitoring while highlighting the importance of balancing early detection against alarm fatigue.

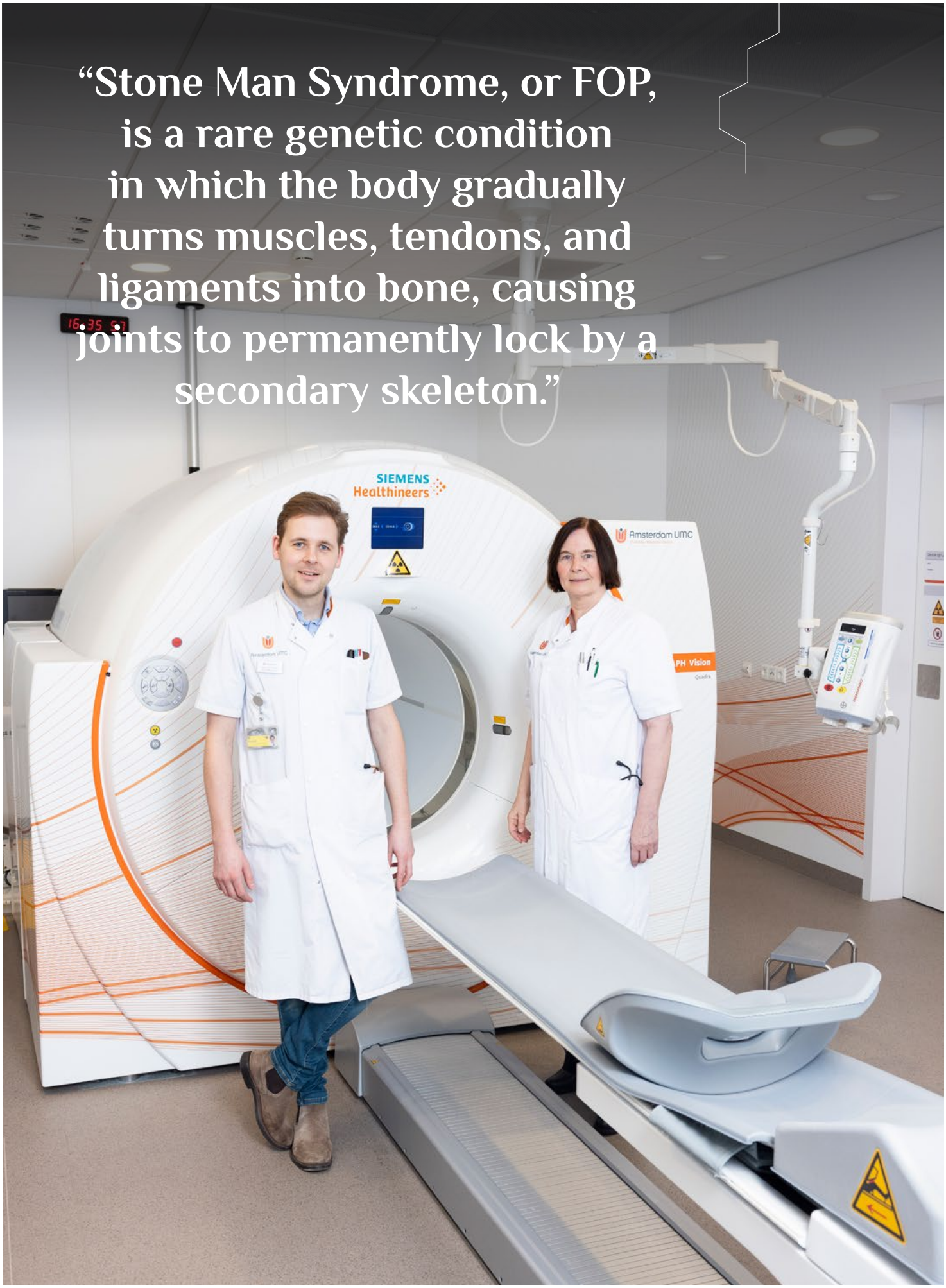
RESPONSIBLE IMPLEMENTATION

Predictive performance alone is insufficient for implementation. Interpretability of model outputs is essential to support clinician trust and decision-making. AI-based tools are therefore designed as decision-support systems that complement bedside assessment and microbiological diagnostics.

Before clinical implementation, external validity, workflow integration, data security, and continuous performance monitoring must be evaluated. The impact on antibiotic use and clinical outcomes should be prospectively assessed to determine added value in practice.

TOWARD SAFER NEONATAL CARE

By translating complex physiological data into infection risk estimates, this research contributes to a shift from reactive to more proactive monitoring in neonatal medicine. The aim is earlier diagnosis of infectious diseases and more informed clinical decision-making in very preterm infants.


“Stone Man Syndrome, or FOP, is a rare genetic condition in which the body gradually turns muscles, tendons, and ligaments into bone, causing joints to permanently lock by a secondary skeleton.”
SIEMENS Healthineers
Amsterdam UMC
PH Vision

VINCENT VERHEIJ AND MARELISE EEKHOFF

Running an Investigator-Initiated Trial

IN THE WORLD OF ULTRA-RARE DISEASES

The Rare Bone Disease Center of Amsterdam UMC's endocrinology department, established and continuously led by professor Marelise Eekhoff, functions as a European referral center for patients with Fibrodysplasia ossificans Progressiva (FOP), an ultra-rare and severely disabling disease for which no widely available treatment currently exists. In addition to providing specialized care to patients from across Europe, the center plays a pivotal role in the development of effective treatments for this pernicious disease. While participating in all the international sponsor-initiated trials, the center launched its own investigator-led study, STOPFOP, to explore the potential of repositioning saracatinib for FOP.

“Drug repositioning allows to build on existing safety data and clinical experience, significantly shortening development time, reducing costs, and bringing potential treatments to patients much faster.”

STONE MAN SYNDROME

Fibrodysplasia ossificans Progressiva (FOP), or ‘Stone man syndrome’, is an extremely rare, devastating congenital disorder in which fibrous tissues like muscles, tendons and ligaments gradually ossify, permanently locking one’s body in the process. Beginning in early childhood, patients typically develop painful swellings after minor injuries or even routine vaccinations that trigger local ossification. As the disease progresses, most patients suffer wheelchair confinement by their 30s and early death from restricted breathing in the fifth decade of life. Sadly, no widely available treatment to cure or slow the disease currently exists. However, the discovery of the causative gene mutation in 2006 sparked a global race for therapies, including Amsterdam UMC’s promising investigator-initiated Phase 2a trial, called STOPFOP.

THE SARACATINIB TRIAL TO PREVENT FOP (STOPFOP)

In 2019, Eekhoff’s team obtained EU funding to launch the multicenter, exploratory phase 2 trial in close collaboration with a group of researchers from Oxford and Harvard university who discovered that saracatinib, a failed drug initially developed for ovarian cancer treatment, selectively and potently inhibits the mutated receptor responsible for FOP and suppresses pathological ossification in FOP mouse models. Inspired by these promising preclinical results, Eekhoff joined forces with both groups in the hope of finding a therapy that is not only safe but also readily accessible and affordable. For patients living with FOP, who currently have no treatment options, this represents a critical step toward meaningful relief.

Marelise Eekhoff

Vincent Verheij

Launched in 2020, STOPFOP enrolled 18 adult patients from eight European countries through Amsterdam UMC and Klinikum Garmisch-Partenkirchen (Germany), and continues to follow participants to date — a long-standing commitment for a trial of this scale. Participants undergo regular assessments by lead sub-investigator, Vincent Verheij, a physician and PhD candidate specializing in FOP management. Vincent shares Eekhoff's excitement for the trial which forms the core of his doctoral research and enables him to pursue his entire PhD within the academic setting of the three renowned universities involved. With enthusiasm, he points to the trial's key strengths, including very compelling preclinical data and the use of small tablets, which offer a clear advantage over intravenous antibodies in a concurrent trial, since IV access can be difficult in patients with joint contractures and may provoke ossification.

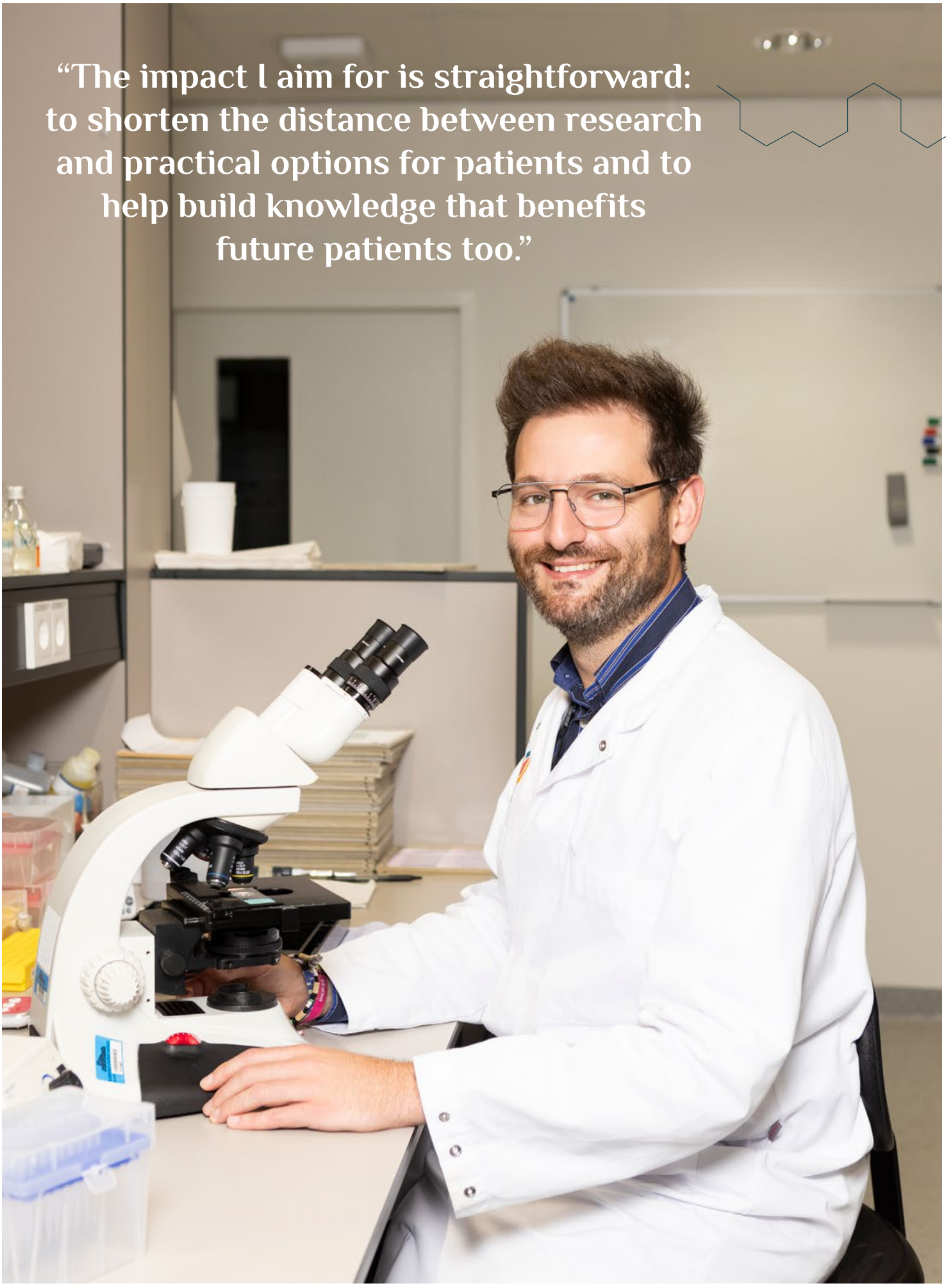
MEASURING EFFICACY WITH 18F-NAF PET/CT WHILE MONITORING SAFETY

Efficacy of saracatinib is assessed using 18F NaF PET-CT imaging, a technique that visualizes active bone formation, whose development as a reliable marker of disease activity was shaped by Eekhoff's team at Amsterdam UMC. Participants undergo low-dose whole-body scanning, enabling assessment of disease activity throughout the body. The trial is now in its final stages, with initial results expected in 2026. Should the data demonstrate safety and efficacy of saracatinib, the group hopes to leverage the results toward conditional market authorization for adults living with FOP.

“At AR&D we are committed to advancing scientific knowledge and ensuring that our generated knowledge and expertise contribute to the health of current and future generations through effective translation of research insights into societal impact.”

Postdoc Appreciation Week

In 2025, AR&D put a number of postdocs in the spotlight during Postdoc Appreciation Week, an annual, internationally recognized event in September dedicated to recognizing the essential contributions of postdoctoral researchers to research, innovation, and academic culture. This year's theme was "Communicating your science and research." The postdocs tell about their research, how they share their knowledge and findings with others, and what kind of impact their research has on the health of current and future generations.


“The impact I aim for is straightforward: to shorten the distance between research and practical options for patients and to help build knowledge that benefits future patients too.”

Sante Berlingerio

My name is Sante, a postdoctoral researcher in Pediatric Nephrology at Amsterdam UMC. I remember a patient asking, “This is interesting, but can we actually take this medicine?” Since then, I have tried to keep my work curious and practical, with a clear focus on patient benefit. I work on cystinosis, a rare genetic disease that affects the kidneys. Despite treatment, preserving kidney function remains difficult for many patients.

In the laboratory of Prof. Elena Levtchenko and Prof. Fanny Oliveira Arcolino, we study why kidney cells are vulnerable in cystinosis. I focus on metabolism and mitochondrial function. In proximal tubular epithelial cell models, in collaboration with the laboratories of Prof. Riekelt Houtkooper and Prof. Fred Vaz, we study how NAD-related metabolic impairment affects cellular metabolism. In parallel, I study ferroptosis in cystinosis podocytes as another potential route to injury. From there, we test interventions. One direction is combining cysteamine, the standard therapy, with NAD precursors, while prioritizing strategies already used in patients or in clinical trials for other diseases, aiming to accelerate translation if they prove relevant in cystinosis. We also test the most promising approaches in a zebrafish model to connect mechanisms to kidney function in vivo. That step matters to me: it is where a mechanism starts to look like a real option.

Within the Emma Center for Personalized Medicine, we collaborate across laboratories and clinical teams. We are part of a wider cystinosis network, and we work closely with cystinosis patient organizations and foundations. I value the people who bridge research, clinicians, and patients to keep priorities aligned. I also take part in patient and family workshops, where we explain findings in plain language and learn what matters; those conversations often shape the next experiments. The impact I aim for is straightforward: to shorten the distance between research and practical options for patients living with cystinosis today, and to help build knowledge that benefits future patients too. More broadly, progress comes from exchanging ideas across scientific communities and bringing different expertise to the same rare-disease problem, so research moves faster and stays focused on what patients need.

"More informal discussions with peers, funding agencies and industry allows us to spotlight our research lines, discuss challenges we are facing and form new collaborations."

Hildo Lantermans

My name is Hildo Lantermans, and at the department of Pediatric Nephrology I study neonatal urine derived kidney progenitor cells and their potential application as cell therapy as well as disease modeling. Kidney disease is a major societal burden by reducing quality of life and leading to premature death and disability. We want to use urine derived kidney progenitor cells for regenerative therapy, as kidneys have limited intrinsic regenerative capacity. Therefore we are developing this into a well-defined and clinical grade product. Furthermore these cells can serve as the basis to model kidney disease in advanced lab grown kidney organoids. These models can be used to understand disease mechanisms, identify new drug targets and test the efficacy of novel treatments. Furthermore, I study disrupted kidney development in children with congenital kidney anomalies. At the moment it is largely unclear which patients will require treatment later in life. By advancing our understanding of the mechanisms underlying incorrect kidney development we aim to improve kidney function in affected patients.

Besides publishing research papers and attending conferences we communicate about our research through various channels. More informal discussions with peers, funding agencies and industry allows us to spotlight our research lines, discuss challenges we are facing and form new collaborations. By attending interdisciplinary meetings as well as discussing with patients, patient associations and the general public we communicate our research to a diverse non-specialist audience.

Lastly we use the various communication channels of Amsterdam UMC to highlight our scientific findings and vision to the general public. A good example of this is that with help of the Communications Department of Amsterdam UMC we have made videos on how and why we isolate and use neonatal urine derived cells in the lab. This was posted on various social media platforms of the Amsterdam UMC and received plenty of attention.


“With my research
I strive to not only
have a scientific
impact, but also a
large societal impact.”

Karuna van der Meij

I am Karuna van der Meij, I work as a postdoctoral researcher at the department of Human Genetics within the section Community Genetics. My research focuses on prenatal screening (NIPT, 13-week ultrasound and 20-week ultrasound) and improving counselling practices to better support pregnant couples and healthcare providers. Screening for foetal conditions during pregnancy can be reassuring for prospective parents, but it can also cause considerable uncertainty and distress. It is crucial that decisions about participation in prenatal screening are well-informed and in line with couples' values. To achieve this, high-quality counselling is essential to support couples in the decision-making process.

With my research I strive to not only have a scientific impact, but also a large societal impact. For example on counseling practices and (inter)national policies regarding prenatal screening. In February 2026, the state secretary of Youth, Prevention and Sport informed the Dutch Parliament about developments regarding prenatal screening. This letter specifically highlighted our study on the quality of counseling for prenatal screening, thus showing how research can have a direct impact on national policy. The results of this study are also being used to revise the national training guidelines for Dutch counselors, further emphasizing its societal impact. This video on the implementation of the non-invasive prenatal test (NIPT) in the Netherlands, in which I am featured, summarizes the key findings of the TRIDENT-2 study in an easily accessible format for the general public and healthcare professionals. Other ways I try to share knowledge are through social media, webinars for healthcare professionals and teaching of bachelor and master students.

With continuing developments in prenatal screening and testing, prenatal care is now on the threshold of a new era of screening and testing opportunities. This opens up more possibilities, thus confronting parents with increasingly difficult choices. As the prenatal screening landscape continues to advance, it is crucial to create a dialogue including all relevant perspectives to ensure that the benefits of screening continue to outweigh the harms. My research aims to ensure equitable access to high-quality prenatal counselling for all couples.

> “My goal is to translate these insights into effective communication strategies and interventions that support informed decision-making and behavior change.”

My name is Fabiola Müller, and with a background in Communication Sciences and Health Psychology, I focus my research on how adolescents and young adults engage with information about the planetary crisis and its associated health risks. My work explores how communication can inform, educate, and empower individuals to adapt to health challenges (e.g., hydrating during heatwaves) and adopt mitigation behaviors (e.g., dietary changes for sustainability). I am interested in both public communication and patient-provider interactions, including communicating scientific uncertainties. A core value in my research is applying a diversity lens, striving for inclusivity and a just transition towards a sustainable future.

I believe that direct engagement is key to effective science communication and personal inspiration. Recently, I participated in two festivals in Amsterdam, where I discussed the planetary crisis and its health impacts with visitors. I also reach diverse audiences by teaching medical students about sustainability in healthcare, organizing seminars and webinars on the mental health effects of climate change, and contributing to professional outreach activities. For example, I redacted and authored a periodical on sustainability in oncology for the Dutch magazine ‘Psychosociale Oncologie’, aimed at an academic and non-academic audience. Additionally, volunteering to help conserve peat bogs – important for CO_2 storage and biodiversity – gives me a practical way to contribute and provides me with new perspectives on the topic I study.

The planetary crisis is fundamentally a health crisis. Through my research, I aim to deepen our understanding of how people perceive and respond to current and future health threats. My goal is to translate these insights into effective communication strategies and interventions that support informed decision-making and behavior change. I am committed to ensuring these approaches are accessible and relevant to diverse populations, and to equipping young people with the knowledge and skills to protect both their health and the planet.


“Sharing these results with people facing fertility problems and fertility care professionals is an important part of my work.”

Mandy Spaan

My name is Mandy Spaan, epidemiologist at Amsterdam UMC. My research focuses on child development and health, particularly in children conceived through assisted reproductive technologies (ART). Since 1978, over 10 million children have been born through ART, with around 1 million each year. As ART differs from natural conception, it may affect early development and long-term health. My research aims to enhance the understanding of the health and development of children conceived through ART. In doing so, it helps fertility care professionals and people facing fertility challenges make informed decisions, while also contributing to the advancement of safer ART methods for future generations.

To study the long-term health of children conceived through ART, we established the Dutch OMEGA cohort, which includes ART children and those born to subfertile parents without ART. Health data was collected from national registries, allowing us to investigate important health outcomes, such as risk of childhood cancer by linking our cohort data to the Netherlands Cancer Registry. Other outcomes include school performance, attendance at special needs schools, and cause-specific mortality using data from Statistics Netherlands. These studies provide valuable insights for fertility care professionals, including gynecologists and embryologists, and prospective and current parents about their children's long-term health.

Sharing these results with people facing fertility problems and fertility care professionals is an important part of my work. I collaborate with the patient organization Freya, providing lay summaries of our findings for their website, and also publish updates on our study website. Recently, we developed an infographic summarizing the cancer risk findings after ART, which was shared with fertility care professionals from ART clinics in the Netherlands. This infographic helps fertility care professionals communicate potential long-term health risks to patients. Additionally, Freya has made the infographic available on their website for broader public access.


“Through my research, teaching activities and public engagement, I work to strengthen knowledge among young people, researchers, and health professionals.”

Marlies Visser

My name is Marlies Visser, and I am a postdoctoral researcher at the Department of Public & Occupational Health where I am involved in the ABCD study. The aim of the ABCD study is to identify and analyze factors in early life (during pregnancy and early childhood) that may help explain health outcomes and health inequalities later in life. I have a background in Health Sciences and International Public Health. During my PhD at the Athena Institute (VU), I studied health-related stigma using primarily qualitative research methods. By working closely with diverse stakeholders such as young adults, family members, health professionals and educators, I explored how social and cultural contexts shape stigma to inform avenues for stigma reduction.

In my postdoctoral research, I focus on menstrual health and women's health. I examine how psychosocial factors across the life course, such as gender, ethnicity, and psychological challenges, shape menstrual complaints and their impact on daily functioning and wellbeing. My work combines qualitative and quantitative approaches, including analyses of both single and harmonized cohort datasets. I am particularly interested in collaboration: bringing together researchers across cohorts, as well as working with professionals and experts by experience to share knowledge and co-design research outputs that extend beyond traditional academic publications (e.g., factsheets, webinars). I also enjoy engaging in guest lectures to exchange insights with students, researchers and professionals, and use platforms like LinkedIn to share research findings.

Menstrual health, and women's health more broadly, has long been overlooked in medical research. As a result, many menstrual challenges and conditions are still misunderstood, stigmatized and/or diagnosed too late. Yet menstrual challenges play a significant role in everyday life, affecting mental health, wellbeing, and participation in education, work, and society. They also come with major economic costs. Through my research, teaching activities and public engagement, I work to strengthen knowledge among young people, researchers, and health professionals to help create more supportive environments in which menstrual and women's health can be discussed without shame and stigma, for the benefit of current and future generations.

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AR&D LUNCH TALK MEETING – TWINNING AND ITS IMPLICATIONS FOR FERTILITY

January 27th, 2025

On Monday January 27, 2025, the first AR&D Lunch Talk Meeting of the year took place at the brand new Research Building of the Vrije Universiteit Amsterdam. The meeting was hosted by AR&D researchers **Dr. Jenny van Dongen**, PhD student **Nikki Hubers** and **Prof. Dorret Boomsma**. This lunch talk kicked-off the international Twinning Genetics Consortium Meeting, which took place in Amsterdam the last week of January. The meeting aimed to share new knowledge about twinning and fertility, and to facilitate exchange of knowledge and ideas between researchers. The meeting was attended by researchers from the Vrije Universiteit and Amsterdam UMC, including AR&D researchers and students from the research master Genes in Behaviour and Health.

Prof. Nils Lambalk opened the lunch meeting, explaining to the audience the importance of research into the connections between fertility and twining. Next, the first international guest speaker, **Prof. Claudio Stern** (University College London, Department of Cell & Developmental Biology, UK) shared exciting novel genetic findings from his research on monozygotic twinning in large human pedigrees from Brazil and India. Prof. Stern also presented latest insights from molecular studies in animal models of monozygotic twinning. After this, **Dr. Jenny van Dongen** presented latest findings from her research for which she and colleagues received the AR&D Research Grant, on DNA methylation in monozygotic twins and patients with Amoplasia, a rare congenital disorder with a 10-fold higher frequency of monozygotic twins among patients. The next international guest speaker **Prof. Nick Martin** (QIMR Berghofer Brisbane, Department of Genetic Epidemiology, Australia), provided an impressive overview of decades of research on the genetics of dizygotic twinning. In the last talk of the symposium, PhD student **Nikki Hubers** shared the latest results from her studies on the genetics of dizygotic twinning. She showed the strong negative correlation between genetic risk of anovulatory fertility and dizygotic twinning, and presented a polygenic score that is predictive of the chance of women to give birth to dizygotic twins after natural conception, and which is lower in women who give birth to dizygotic twins after ART (Assisted Reproductive Technology).

In between presentations, participants and speakers continued discussions while enjoying a lunch. It was an inspiring meeting, where new connections were established and research ideas were discussed.

AR&D LUNCH TALK MEETING – WHERE A HEALTHY FUTURE FOR ALL STARTS

March 27th, 2025

On Thursday March 27, 2025 we opened our annual theme 'Shaping Tomorrow's Health Today' with an inspiring Lunch Talk Meeting led by **Prof. Tessa Roseboom** (Future Generations Commissioner Amsterdam UMC). In the year that Amsterdam celebrates its 750 year history, we not only looked back, but also looked forward and imagined what we want for our world, our city, its people and their health. We have been shaped by the decisions and actions of our ancestors. In turn, our choices will influence the world future generations inherit. Research of AR&D has shown that the environment in which we grow and develop impacts our health and the potential for future generations to thrive. Today, numerous challenges threaten this environment. So, it is crucial we take action now to articulate and create a healthy, supportive environment for future generations to flourish and reach their full potential. Together, we can shape tomorrow's health today!

During the Lunch Talk Meeting, Tessa inspired the attendees to think about how our actions today impact the environment in which future generations are shaped and will live. She showed that health starts early in life, and that investing in a healthy environment during the earliest phases of development is one of the best investments for a hopeful healthy future. Research at AR&D focuses on this early period of human development and has the potential to support the UN Declaration on Future Generations, and is in line with Amsterdam UMC's new strategy 'A Healthy Future for All'. Tessa left everyone with a beautiful assignment. All attendees got to pick a book, which she had brought, to read with the assignment to formulate what they do to contribute to healthy future generations.

During the meeting, the AR&D Research Grant 2025 was announced. In line with the annual theme, with the AR&D Research Grant, we were taking action to contribute to the foundations we want to lay for future generations. In doing so we not only add to the ambition of Amsterdam UMC to strive for 'a healthy future for all', but also put into practice action 28 of the Pact for the Future, part of the recently signed UN Declaration on Future Generations, which states *'seize the opportunities presented by science, technology and innovation for the benefit of people and planet'.*

AR&D events 2025

AR&D ROUND TABLE DISCUSSION AND SYMPOSIUM - SHAPING TOMORROW'S HEALTH TODAY

June 19th, 2025

On Thursday June 19, 2025 Amsterdam UMC hosted a full day dedicated to rethinking how science, policy, and healthcare can serve the health and wellbeing of generations to come. After the Amsterdam UMC Board of Directors posed for a photo next to the children's drawings created by pupils from two primary schools in Amsterdam Zuidoost in response to the question "What does a bright future look like?", the morning began with a Round Table Discussion and was followed in the afternoon by the annual Symposium, with the theme "Shaping Tomorrow's Health Today".

Round Table Discussion

The Round Table Discussion brought together scientists, policy makers, societal organizations and politicians. The event explored how to translate the UN Declaration on Future Generations into policy and practice for the benefit of the health and wellbeing of future generations.

The session was led by **Prof. Huub Dijstelbloem** and **Prof. Tessa Roseboom**, and featured contributions from **Sophie Howe**: the world's first Future Generations Commissioner (Wales), on the Welsh model of protecting long-term wellbeing, and **Sir Peter Gluckman**: the president of the International Science Council, who spoke about the role of science in serving society and informing policy. In three focused discussion rounds, participants examined how to embed the interests of future generations into policymaking, what kinds of scientific evidence and frameworks are needed to support fair, future-oriented health strategies, and how institutions from governments to health foundations can work together to protect human health of current and future generations.

The Round Table Discussion was lively and constructive, and is likely to be the start of an ongoing conversation where policy makers, health foundations and scientists will explore how to work together on a common goal and strategy towards a healthy future for all and contribute to healthy future generations. As Tessa Roseboom put it: "We must act today as though the lives of all our descendants depend on it – because they do."

AR&D Symposium

After the inspiring Round Table Discussion, everyone gathered for the Symposium. This year's theme "Shaping Tomorrow's Health Today" reflected a growing recognition that reproductive and developmental research must directly contribute to a sustainable and equitable future.

Prof. Tessa Roseboom led a vibrant program that encouraged all researchers to explore how their work contributes to the health of future generations. The symposium not only featured keynote talks from **Sophie Howe** and **Sir Peter Gluckman** but also showcased **AR&D researchers** who investigate in the lab, clinic or the wider society how to contribute to healthy beginnings and hopeful futures.

The event concluded with a panel discussion including **Prof. Arne Popma, Dr. Karen Kruijthof, and Prof. Tessa Roseboom** which focused on what we can do today to contribute to a healthy tomorrow. Arne Popma called on all participants to be brave and speak up for those whose voices are unheard. Possibilities to include an empty chair for future generations at our meeting table, or a children's fire were mentioned as practical ways to take the interests of future generations into account.

Recordings of the thought-provoking keynotes, the panel discussion, and the innovative ideas shared throughout the day are available on our website.

Both events served as a powerful reminder that the challenges we face, such as mental health issues, inequality, and trauma are deeply connected to health and human potential of current and future generations. They also affirmed that through interdisciplinary collaboration, and research into reproduction and development can contribute to building foundations for a healthy future for all.

AR&D events 2025

AR&D RETREAT 2025 – PREPAR&D FOR FUTURE GENERATIONS

October 9th and 10th, 2025

On October 9 and 10, 2025 the annual AR&D Retreat took place. With this year's theme being "PrepAR&D for Future Generations", all the focus was shifted to the lessons learned from the past and how we can better prepare ourselves and the world for the future.

Day 1 of the Retreat

The Retreat took place in the NH Noordwijk Conference Centre Leeuwenhorst, and kicked of with an opening by AR&D co-director **Sebastiaan Mastenbroek** and three inspiring keynotes by **Dr. Anja Schreijer**, a medical director at pandemic & disaster preparedness center, **Marcel Zuijderland**, board member of the Medical Ethics Committee at Amsterdam UMC, and **Dr. Susanne de Rooij,** biological psychologist and epidemiologist at Amsterdam UMC.

Marcel Zuijderland explored the ethical implications of technological interventions in human enhancement, arguing that evolution hasn't optimized us, so we could now improve ourselves. Marcel highlighted benefits like respecting autonomy and improving quality of life, but also raised concerns about inequality, 'ontological erosion', and the loss of human imperfection. The idea of a 'symbiotic partnership' between humans and technology was discussed, where both influence each other in a feedback loop. The session ended with a debate on whether enhancements like disease prevention or academic advantages are truly necessary, and whether we should trust evolution instead of intervening directly.

Dr. Susanne de Rooij focused on the importance of building a 'future-proof' brain, highlighting the growing prevalence of neurodegenerative diseases, especially dementia. She discussed how early life factors, such as maternal exposure to hunger, shape brain development, influencing cognitive health later in life. Susanne explained concepts like brain maintenance, brain reserve, and cognitive reserve, stressing the need for early intervention and the impact of environmental factors, like air pollution, on brain health. She emphasized the urgency of research beyond observational studies, as neurological disorders affect 1 in 3 people worldwide.

Dr. Anja Schreijer discussed the ongoing threat of pandemics, emphasizing that the real question isn't if, but when the next

one will occur. She highlighted the lessons learned from COVID-19, such as the need for better digital networks across disciplines and robust data infrastructure to track outbreaks. She also stressed the importance of interdisciplinary approaches in pandemic preparedness and the need for tailored, flexible plans to address diverse health challenges on individual, public, global, and planetary levels.

In the afternoon, it was time for the PhD candidates to present their pitches they prepared. Distributed over multiple rooms, the students were judged by pairs of principle investigators, who selected the best pitch per room. In a subsequent plenary session on the second day, the finalists competed together to win the final prize of €1000! Congratulations to Isa Bijloo for the Best Pitch prize! The first day of the Retreat was closed by a networking opportunity, games, dinner, and a bowling session.

Day 2 of the Retreat

The second day kicked off with a relaxing yin yoga session, a mindful walk or a quick run to activate and sharpen the mind for the upcoming day. This was followed by an intriguing panel discussion moderated by **Tobias Bartman**, focusing on the role of researchers in the digital age. Panel members **Eva Cohen, Dr. Bahareh Goodarzi, Dachel Seeratan,** and **Dr. Natalie Evans** discussed topics including the impact of social media and LinkedIn on scientific communication, the responsibility of researchers to combat fake news, and the ethical considerations of activism in science. The panel, together with all participants explored whether scientists should use their platforms to engage with the public on these issues, and discussed the potential challenges of balancing scientific expertise with personal opinions. This was followed by the award ceremony for the AR&D Travel Grant, during which several winners who had already traveled shared their experiences.

To learn through experience, attendees could join workshops like **The Power of Lifestyle** by Student&Leefstijl, **Valorisation: From Knowledge to Impact** by Eline van Dulmen-den Broeder, **The Role of Researchers in Societal Change**, and **Shaping Your Ideal Career Path** by ProActief UvA in the afternoon. The Retreat ended with the finals of the pitch presentations, which was beautifully tied together by a closing ceremony. We would like to thank the AR&D Retreat 2025 committee consisting of Aranka van Waesemaal, Bo Paans, Britt Post, Fabio Blom, Nina Frerichs, Janette Huijser, Maryam Khelil, Loïs van der Minnen, Puck Mulder and Wouter van Vugt for organizing such a great event and making us prepAR&D for a healthy future for all!

AR&D GRANT AWARD CEREMONY

December 4th, 2025

On Thursday December 4, 2025, the AR&D Grant Award Ceremony was held. The day started with a short introduction from one of our institute directors **Prof. Martijn Oudijk** and was followed by two pitches from the Sustainability Grant winners **Romina Boers and Rosalie Linssen** and six pitches from the Research Grant winners **Eva van der Heide, Karl Jacobs, Callista Mulder, Cilla Verbeek** and **Britt Post, Wes Onland,** and **Dorinde Korteling.**

More information about the research projects that have been awarded an AR&D grant can be found in the following chapter. The ceremony was finished by a nice lunch and some networking.

AR&D grants 2025

The AR&D Research Grant 2025 enabled researchers from Amsterdam UMC to perform research in the field of reproduction and development (the circle of life) and focused on research projects that contribute to the foundations we can lay for future generations. The projects may comprise fundamental (biological), clinical, paramedical, implementation, translational or epidemiological research. Six grants of €50.000 were awarded.

Eva van der Heide and Eva Cohen
SAFE: Sustainable contrAception for Future generations: a life cycle and Environmental risk assessment approach

We are Eva van der Heide and Eva Cohen, both PhD candidates on environmentally sustainable healthcare and associated with the department of Obstetrics and Gynecology at Amsterdam UMC. Together with Prof. Wouter Hehenkamp (gynecologist at Amsterdam UMC), Dr. Caroline Moermond (senior advisor pharmaceuticals and the environment at RIVM), Lowik Pieters (PhD candidate circular economy and sustainability at RIVM) and Prof. Jurjen Luykx (psychiatrist at Amsterdam UMC), and supported by this AR&D Research Grant, we are able to conduct transdisciplinary research on the environmental impacts of hormonal and non-hormonal contraceptive methods.

Our goal is to quantify the environmental footprint of contraceptive methods and to estimate the ecotoxicological risks posed by steroid hormones originating from hormonal contraceptive use. We were beyond happy when we received the news about the grant award, as it enabled us to perform pioneering research at the intersection of healthcare practice, pharmaceutical production processes, and environmental impact assessment. The project aims to inform guidelines about sustainable contraception choices (e.g. NHG-guideline on contraception) and guide the development of lower-impact production, use and disposal strategies, while preserving contraceptive effectiveness. Thanks to the AR&D Research Grant, we have already completed an extensive literature review on the environmental impacts of contraceptive methods. Moreover, we have recently started a project investigating the environmental impact of steroid hormone production and another project assessing the absolute aquatic risks posed by steroid hormones originating from contraceptive use in the Netherlands.

Karl Jacobs
Mapping Human Vascular Development: 3D Reconstruction of Embryonic and Fetal Vasculature in Health and Disease

My name is Karl Jacobs and I am a lecturer and researcher at the Department of Orofacial Pain and Dysfunction and the Department of Anatomy and Developmental Biology at the Academic Center for Dentistry Amsterdam (ACTA). I am also affiliated with the Department of Medical Biology, Clinical Anatomy section, at Amsterdam

Callista Mulder

UMC. The AR&D project is being carried out in collaboration with Dr. Bernadette de Bakker (Amsterdam UMC), with support from colleagues within ACTA and the Dutch Fetal Biobank. There is also a collaboration with Dr. Ruslan Hlushchuk of the University of Bern, an expert in the field of microangiography and vascular imaging. The aim of the project is to map the development of the vascular system in human embryos and fetuses using three-dimensional imaging. By systematically mapping these early blood vessels and comparing normal and abnormal development, the research aims to better understand how disruptions in vascular development can contribute to congenital abnormalities, particularly in the craniofacial region. In the long term, this should lead to a detailed 3D reference map of human vascular development and new opportunities to better recognize abnormalities.

Receiving the AR&D grant was a special moment. My initial reaction was one of great enthusiasm and gratitude that this research – into the role of vascular development in congenital disorders – is seen as an important and promising area of research. Thanks to the grant, we have now started preparations for the project, including setting up the research workflow and preparing the first specimens for imaging. These first steps form the basis for a new research direction in which vascular development is central to understanding congenital disorders.

Callista Mulder
Transgenerational threats: PFAS impact on germ cell development using the gastruloid embryo model

We, Thijs van Boxtel (Assistant Professor, Developmental, Stem Cell and Cancer Biology (DSCCB) Swammerdam Institute for Life Sciences (SILS), University of Amsterdam) and Callista Mulder (Assistant Professor, Reproductive Biology Laboratory, Amsterdam UMC, location AMC), are fascinated with the versatility of the gastruloid model. Gastruloids are stem cell–derived embryo models that recapitulate the early development, roughly comparable to 2–3 weeks of human gestation. Recently, it was discovered that, just as in a real embryo, the first germ cells are formed. This is where our interests come together: the gastruloid model may provide a means to investigate the earliest developmental origins of human reproductive biology and could be used to understand how our environment contributes to widespread declining fertility.

A growing concern is exposure to environmental toxins during this precarious stage of development. PFAS, often referred to as a “forever chemical”, are a key example. Worryingly, it was recently discovered that all Dutch inhabitants carry high concentrations of PFAS in their blood. In this AR&D-funded project, we will set out to use human induced pluripotent stem cell (iPSC) derived gastruloids and expose them experimentally during critical windows of germ cell formation. This enables us to study the effect of PFAS on germline formation and epigenetic reprogramming, an essential process at the start of germ cell formation. This proof-of-principle study will address important gaps in our understanding of how PFAS may disrupt human germline development and pose risks to future generations.

Of course, we felt very grateful and excited when we heard the news about receiving this AR&D-grant! It will definitely help solidify our collaboration. Hatice Göl has just started on the project and the first human gastruloids are in the incubator as we speak. We are all thrilled to see the outcomes.

AR&D grants 2025

Cilla Verbeek and Britt Post
GAIA - Gynaecological Artificial Intelligence Assistant for adenomyosis and uterine niches

We are Britt Post and Cilla Verbeek, physician–researchers in benign gynecology, working under the supervision of Dr. Robert de Leeuw and Prof. Judith Huirne. Our current research is conducted in close collaboration with our AI specialist, Bianca Schor.

Britt's research focuses on uterine niches, defined as a myometrial scar defect following a Caesarean section. In addition to subfertility, uterine niches may cause dysmenorrhea, heavy menstrual bleeding, dyspareunia, and pelvic pain. Cilla's research focuses on adenomyosis, a condition characterized by the presence of endometrial tissue and glands within the myometrium, which may result in dysmenorrhea, heavy menstrual bleeding, dyspareunia, pelvic pain, and subfertility. Both conditions remain challenging to diagnose accurately using ultrasound imaging, while artificial intelligence shows strong potential as a tool to support medical diagnostics. We are therefore extremely grateful to have received an AR&D grant to develop a point-of-care minimally viable AI decision-support tool for ultrasound-based assessment of uterine niches and adenomyosis.

Britt was the first to discover that we had been awarded the grant and immediately called Cilla with great enthusiasm. We subsequently shared the news during a FaceTime call with Robert de Leeuw. Thanks to this grant, we have already been able to collect a substantial number of ultrasound images and perform segmentation and classification of niches and adenomyosis. We aim to present our first findings at major congresses in the fields of ultrasound, imaging, and gynecology at the end of 2026.

Wes Onland
The MD vs AI study (Accuracy of predicting bronchopulmonary dysplasia in preterm infants: medical doctors versus artificial intelligence)

My name is Wes Onland and I am a pediatrician-neonatologist working at the Neonatal Intensive Care Unit (NICU) at Amsterdam UMC, location AMC. Together with Dr. Marsh Königs, Dr. Frank Bennis and Prof. Jaap Oosterlaan from the Follow Me program and Prof. Anton van Kaam, head of the NICU, we work on early prediction of bronchopulmonary dysplasia in preterm infants. Since predicting the risk of BPD is troublesome for clinicians, leading to significant undertreatment, we have developed a machine learning artificial intelligence (AI) model, the Amsterdam UMC BPD model, for prediction seven to fourteen days after birth combining clinical data and continuous bedside oxygenation recordings with sufficient performance.

However, prediction models, such as this one, are to date not used in clinical practice due to lack of evidence that these models outperform clinical judgement. With this wonderful grant, we are able to perform the MD vs AI study with the aim to compare the discriminating and calibrating performance of the AI model and the clinical judgement assessed by the treating physicians in preterm infants.

When we heard we were selected for the AR&D Research Grant we were beyond happy that we could start the study which will show if AI models can outperform medical doctors in predicting long term outcomes, such as bronchopulmonary dysplasia.

Dorinde Korteling
Beyond Limits: Measurement of Physical Function in All Children

My name is Dorinde Korteling and I am a PhD researcher at the Emma Children's Hospital, focusing on psychometric

analyses of patient-reported outcomes (PROMs) and their clinical application. Psychometrically sound and clinically meaningful PROMs allow for the use of reliable data in care settings, supporting more informed conversations between healthcare providers, children, and parents, and ultimately improving personalized care.

My current project, in collaboration with Prof. Lotte Haverman, Prof. Caroline Terwee, Dr. Marjolijn Ketelaar, and Dr. Hedy van Oers, is based on the belief that all children, regardless of ability, diagnosis, or age, deserve relevant and accurate measurements of physical functioning. PROMIS instruments enable this precise measurement, improving efficiency while limiting the number of questions for children. Although these instruments currently have limitations at the extremes of physical ability, they offer the opportunity to address these gaps by adding or refining items – without needing new tools or more questions.

Our team has been awarded the AR&D Research Grant 2025 to enhance the PROMIS paediatric Mobility and Upper Extremity instruments. By developing and validating items that better reflect the full continuum of physical ability, we aim to create inclusive, futureproof outcome measures that support equitable, personalized care for all children. We are currently formulating new items through literature searches and input from healthcare professionals and researchers, and will soon involve parents and children.
I am grateful for the AR&D Research Grant 2025 and excited to continue this research to benefit effective, personalized measurement!

In 2025, AR&D continued with the AR&D Sustainability Grant, which was first awarded in 2024. Researchers could apply for three types of grants: DO grant (€5,000) to bring a good idea to fruition with a (likely) sustainable outcome that supports research; IMPLEMENT grant (€10,000) to implement a known sustainable action in research practice or to start a pilot study on more sustainable care; RESEARCH grant (€15,000) to conduct a small study in parallel to already ongoing research. Two grants were awarded.

Romina Boers
Outpatient Cervical Priming with Oral Misoprostol: A systematic Review

My name is Romina Boers and I am a medical doctor (MD) and a second-year PhD candidate in Obstetrics and Gynecology at Amsterdam UMC, under the supervision of Prof. Christianne de Groot and Dr. Marjon de Boer. My research focuses on improving current labor induction practices, with a growing emphasis on sustainability in obstetric care. With the AR&D Sustainability Grant, I am conducting a systematic review and meta-analysis evaluating the safety and effectiveness of outpatient oral misoprostol for induction of labor. In addition to key clinical outcomes, such as cesarean delivery and maternal and neonatal adverse events, we assess whether this strategy may reduce medical waste, hospital resource use, and related emissions compared with the current outpatient method. By examining both clinical and environmental outcomes, this project aims to support evidence-based decisions that balance quality of care with ecological responsibility. When I received the email announcing that we had been awarded the grant, I felt incredibly excited and grateful. The funding has enabled me to dedicate additional research time to this study and to further integrate sustainability into obstetric research and clinical practice.

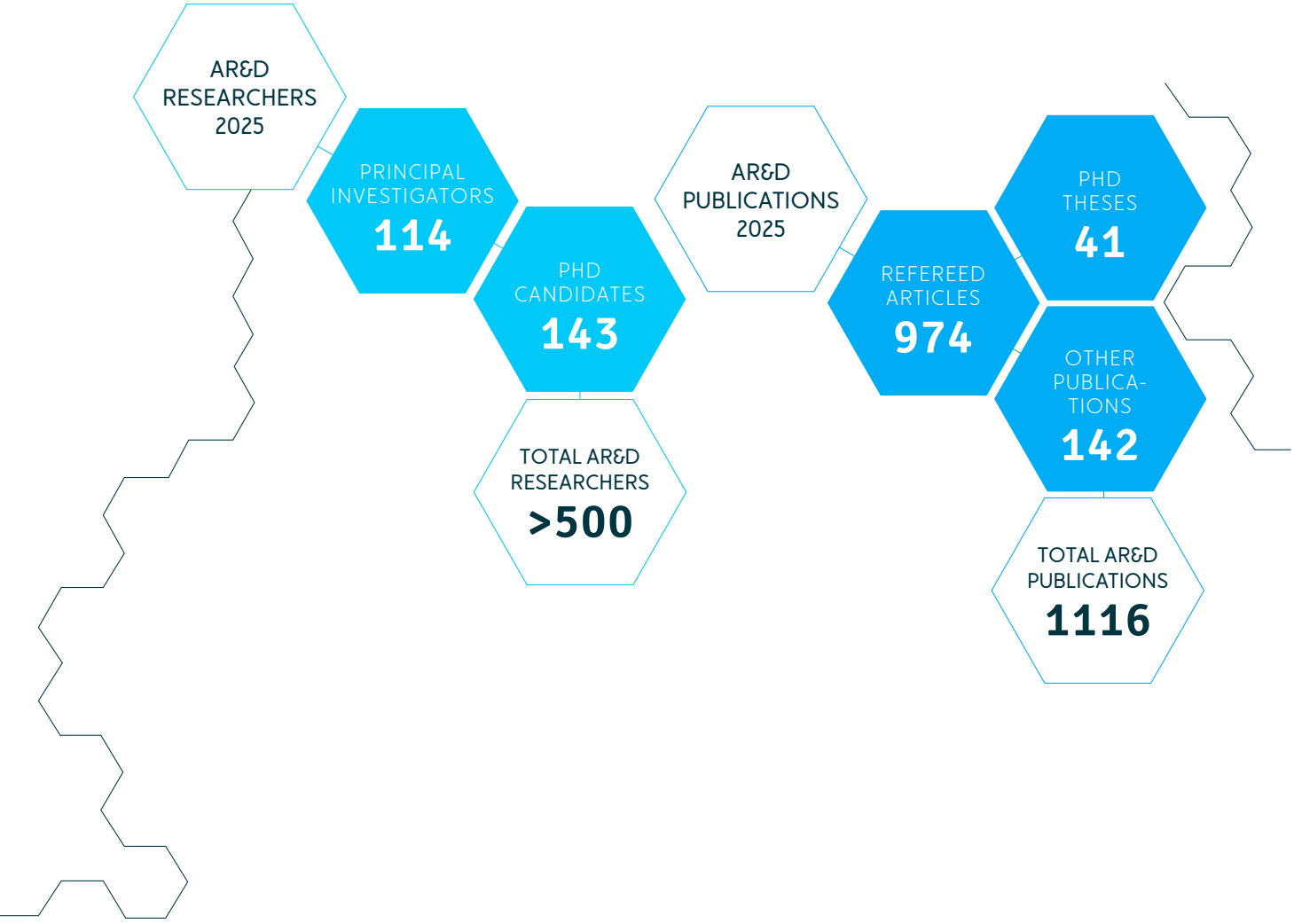
Rosalie Linssen
The environmental impact of conventional low flow versus high flow nasal cannula (HFNC) respiratory support in infants with bronchiolitis: a life cycle analysis

I am Rosalie Linssen, a pediatric resident (AIOS) and postdoctoral researcher at Emma Children's Hospital, Amsterdam UMC. I collaborate closely with Lotte van Liempt (pediatric resident), Prof. Plötz, Dr. Bem, and Dr. Kapitein in the pediatric intensive care units (ICU) at Amsterdam UMC, as well as with colleagues at Tergooi MC. Together, we are studying the environmental impact of high-flow nasal cannula therapy in children, a widely used form of non-invasive respiratory support. As we move toward a more sustainable healthcare system, it is crucial to understand the environmental impact of the medical care we provide to our patients.
This awareness will enable us to make smarter, more conscious choices for the future of our planet. Receiving the AR&D grant has provided a significant boost to our project, and we expect to share our findings by mid-2026. More importantly, we aim to share our knowledge on conducting environmental studies including life-cycle analysis, with other researchers through the Emma Children's Hospital Green Team.

“Central to AR&D research is the integration of different interdisciplinary approaches and research methodologies within Amsterdam UMC and the universities VU and UvA.”

Numbers and highlights

AR&D IN NUMBERS



DISCLAIMER RESEARCH INFORMATION

RESEARCHERS

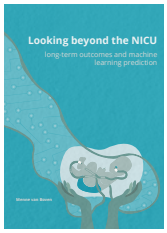
Information about the number of researchers affiliated with AR&D was collected using the Research Information System Pure Amsterdam UMC and Pure VU on April 30, 2026. Registration of research institute affiliation was done by the researchers themselves, by personnel from the Medical Library, by secretary of corresponding department or by the policy officers of the AR&D research institute.

PUBLICATIONS

The reported data include all published research output as registered in the Research Information System Pure Amsterdam UMC and Pure VU on April 30, 2026. Publications are ascribed to AR&D based on the affiliations of the authors and the content of the publication. A publication can be ascribed to one or more research institutes depending on the affiliations of the authors.

AR&D PHD THESES

In 2025, 41 researchers obtained their PhD in the area of reproduction and development
Below a cross section of the PhD theses.



Looking beyond the NICU – long-term outcomes and machine learning prediction

Menne van Boven

This thesis investigates long-term outcomes after preterm birth, focusing on lung and neurodevelopmental outcomes, and explores the use of machine learning for prediction. A meta-analysis shows preterm birth triples the risk of adverse pulmonary outcomes. Machine learning models developed using early-life data outperformed conventional models, especially in predicting five-year outcomes, with high negative predictive value. The thesis also examines structured neonatal follow-up, highlighting its value for both patient care and research through integrated data collection.

Let's talk about sex: optimising the management of unexplained infertility

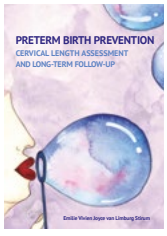
Felicia Dreischor

This thesis aimed to optimise expectant management (EM) for couples with unexplained infertility and a favourable prognosis, focusing on sexual health. Currently pregnancy rates remain limited, and EM often fails to meet couples' need for action and information, leading to overtreatment. This thesis describes couples' needs during EM, the development of the web-based Pleasure&Pregnancy programme, a randomised controlled trial evaluating its effectiveness and the sexual health and determinants in couples newly diagnosed with unexplained infertility.

Sleep (measurement) in hospitalized children: disturbances and perspectives for interventions

Pia Burger

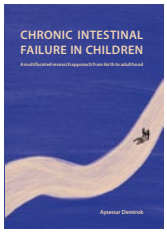
The thesis demonstrates that (1) accurate, child-friendly objective sleep monitoring is attainable; (2) hospitalization consistently compromises sleep across age groups; (3) pain and routine ward practices are key modifiable drivers; and (4) low-risk environmental, behavioral and sensory interventions show promise but warrant rigorous, standardized evaluation. Together, these insights provide a framework for clinicians and researchers to integrate sleep-conducive practices into everyday hospital care and to design targeted, evidence-based interventions that restore restorative sleep to inpatients.



Preterm Birth Prevention – Cervical Length Assessment and Long-term Follow-up

Emilie van Limburg Stirum

Preterm birth (birth before 37 weeks of gestation) can have major consequences for the child. Preventing preterm birth is therefore important. This thesis focuses on (1) how cervical measurements can improve the prediction of spontaneous preterm birth, and (2) the long-term effects of interventions used to prevent preterm birth. 1) We found significant differences in cervical length measurement methods. Standardizing this measurement could improve the identification of women at risk. Cervical shortening over time can contribute to preterm birth prediction. Cutoff values for a short cervix may need to be adjusted by population. 2) Common pregnancy interventions include progesterone and low-dose aspirin. We concluded that these treatments are most likely to be safe for the child on the long term, supporting its broader use.



Chronic intestinal failure in children: a multifaceted research approach from birth to adulthood

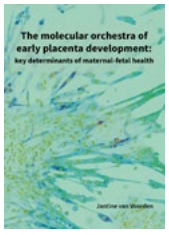
Aysenur Demirok

Chronic intestinal failure (CIF) in children is a rare condition where the intestines are unable to absorb sufficient nutrients, fluids, and salts, leading to growth disturbances and the loss of homeostasis. This thesis consists of four parts. Part I focuses on pediatric intestinal pseudo-obstruction (PIPO), a severe motility disorder. The studies showed a highly variable course of the condition and treatment, frequent surgical interventions, and high morbidity. Part II discusses complications related to central venous lines, including line sepsis caused by Staphylococcus aureus and thrombosis. Part III investigates the transition from pediatric to adult care and presents a checklist of essential steps to support this transition. The study shows that adolescents are often insufficiently prepared for the transition. Part IV highlights the impact of having a child with CIF on parents through qualitative research. Finally, a Core Outcome Set (COS) has been developed with ten essential outcome measures for future research. This COS promotes consistent, patient-centered, and internationally comparable studies.

TRIP13 and Germline Gene Expression in Cancer: Mechanisms of Acquired Radioresistance

Wenqing Liu

This thesis explores germ cell cancer genes (GC genes), a group of over a thousand genes normally active in reproductive cells but found to be ectopically expressed in many cancer types. One key gene, TRIP13, may help cancer cells survive and resist treatments like radiation. By studying how TRIP13 functions in lung cancer cells, we found it plays a role in DNA repair and therapy resistance. Understanding and targeting these "germline-like" genes may lead to more precise cancer treatments with fewer side effects on healthy tissues.



The molecular orchestra of early placenta development: key determinants of maternal-fetal health

Jantine van Voorden

This dissertation investigates how the human placenta develops and how its formation can be disrupted in pregnancy complications. The placenta nourishes and protects the fetus, and early developmental issues can lead to conditions like preeclampsia and poor fetal growth. Using placental cell models and early pregnancy tissues, the described studies show that precise coordination of multiple fetal and maternal molecular factors is crucial for healthy placental development and provide new tools for future research.

Human spermatogonial stem cells: growing hope for infertile male childhood cancer survivors

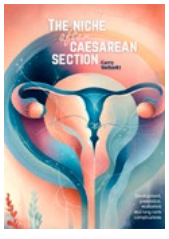
Jillis van Maaren

This work describes steps towards clinical implementation of human spermatogonial stem cell autotransplantation (SSCT), to restore fertility in men with infertility due to childhood cancer treatments. This research describes ways to reduce hindering testicular somatic cell overgrowth in testicular cell cultures aimed at propagation of spermatogonial stem cells. Additionally, steps are taken to adjust the culture method to regulations for clinical implementation. Furthermore, patient perspectives on fertility preservation and restoration through SSCT are explored.

Navigating Pathways of Gynaecological Gender-Affirming Surgeries for Transmasculine and Genderdiverse Individuals

Asra Vestering

This thesis examines gynaecological gender-affirming surgeries, such as removal of the uterus (hysterectomy) or closure of the vagina (colpectomy), in transmasculine and gender-diverse people. It explores how patients experience these surgeries, compares a new robotic technique for colpectomy with the traditional vaginal method, and investigates whether taking testosterone increases cancer risks in the uterus, ovaries, cervix, or vagina. The findings show that, although patients' experiences vary, surgery can ease distress and improve well-being. The robotic method offers a safe alternative to the traditional technique, and no increased cancer risk has been found, though continued research is needed.



The Niche After Caesarean Section – Development, prevention, evaluation and long-term complications

Carry Verberkt

This thesis explores a common complication after a cesarean section called a "niche," which is an indentation at the site of the uterine scar. It examines the risk factors for developing a niche and how it might be prevented using different suture techniques or adhesion barriers. The study also looks at long-term issues such as pain, fertility problems, and risks in future pregnancies, offering ways to reduce complications and improve care for women post-cesarean.

EXTERNAL GRANTS AND PRIZES

In 2025, AR&D researchers were very successful in obtaining grants and prizes. Below some of the external grants and prizes awarded to AR&D researchers are highlighted.

HORIZON EUROPE - MARIE SKŁODOWSKA-CURIE ACTIONS

€4,630,679, including €1,648,823 for Amsterdam UMC

Gender-InSIGHT: Investigation of biopsychoSocial Influences on Gender during diverse Hormonal Transitions

David Doyle, Baudewijntje Kreukels, Sabine Hannema and Katharina Block, together with other parties

ZONMW - DOELMATIGHEIDSONDERZOEK

€800,000

De (kosten) effectiviteit van een mHealth interventie bij chronische bekkenpijn

Robert de Leeuw

ZONMW – VROUWSPECIFIEKE GEZONDHEID

€750,000

MOTHER-II een cohortstudie naar de associatie tussen geboorte foetale caput en bekkenbodemdysfunctie

Corine Verhoeven

ZONMW – VROUWSPECIFIEKE GEZONDHEID

€749,886

Uterine Vascularisatie & Innervation als Key Targets voor adenomyose therapie: multimodaal onderzoek

Judith Huirne, Lynda Juffermans, Bernadette de Bakker and others

NWO - OPEN TECHNOLOGIE

€614,000

The MASK-FIT project

Reinout Bem

RIVM

€258,170

PFAS COVID MILK

Hans van Goudoever, Chris van den Akker and Nora Carpaij

LONGFONDS

€250,000

The PRIDICT-BPD study

Michelle Romijn and Wes Onland

AWARDS

Amsterdam Impact Award 2025 Category Society

Tessa Roseboom

Amsterdam Impact Award 2025 Category Health

Erik Sistermans

AUF Impact Award

Marissa Harmsen

AUF Impact Award

Jana Runze

Societal Impact Award 2025

Luc van Lonkhuijzen and Stijn Mom

KEY PUBLICATIONS

2025 was a very productive year. Here is a small selection of peer-reviewed publications that were highlights for our researchers.

This is by no means a complete overview of our researchers' highlights.

The composition of commercially available human embryo culture media
Zagers et al.
Hum Reprod.
2025 Jan 1;40(1):30-40.

Oral Glucose-Lowering Agents vs Insulin for Gestational Diabetes: A Randomized Clinical Trial
Rademaker et al.
JAMA.
2025 Feb 11;333(6):470-478.

International expert consensus statement on the diagnosis and management of congenital nephrogenic diabetes insipidus (arginine vasopressin resistance)
Levtchenko et al.
Nat Rev Nephrol.
2025 Feb;21(2):83-96.

Long-term risk of endometrial cancer after assisted reproductive technology
Spaan et al.
Hum Reprod.
2025 Apr 1;40(4):739-749.

Incidence of gynaecological (pre-) malignancies and endometrial activity in transmasculine and gender diverse individuals using testosterone: a retrospective, single-centre cohort study
Vestering et al.
EClinicalMedicine.
2025 May 12:84:103248.

Cerebroplacental ratio-based management versus care as usual in non-small-for-gestational-age fetuses at term with maternal perceived reduced fetal movements (CEPRA): a multicentre, cluster-randomised controlled trial
Lens et al.
The Lancet Obstetrics, Gynaecology, & Women's Health
2025 September;1(1):e19-e27.

The feasibility and effectiveness of using an adhesion barrier in preventing dysmenorrhea, pain, and niche-related problems after cesarean sections: a multicenter randomized pilot study
Post et al.
Am J Obstet Gynecol MFM.
2025 Oct;7(10):101742.

Subsequent risk of preterm birth after second-trimester medical termination of pregnancy
Van Gils et al.
Am J Obstet Gynecol.
2025 Nov;233(5):485.e1-485.e13.

Short-Term Outcomes of Implementing Less Invasive Surfactant Therapy in Infants Born Less than 30 Weeks: A Retrospective Trend Analysis
De Ridder et al.
J Pediatr.
2025 Nov:286:114721.

Discovery of a DNA methylation episignature as a molecular biomarker for fetal alcohol syndrome
Van der Laan et al.
Genet Med.
2025 Dec;27(12):101586.

AR&D RESEARCHERS IN THE MEDIA

In 2025, AR&D researchers have been active in sharing their knowledge and research findings. A small selection of media contributions is presented.

This is by no means a complete overview of our researchers' highlights.

Endometriose komt voor bij 10% van de vrouwen: "Het is niet zomaar een buikkramp"
Velja Mijatovic on BNNVARA

Eerste baby in Engeland na baarmoedertransplantatie, kan dat ook in Nederland?
Wouter Hehenkamp on NPO Radio 1 NOS Met het Oog op Morgen

Mark wordt geholpen in een speciaal long covid centrum
Stéphanie van Straaten on NOS Jeugdjournaal

Vrouwenspreekuur voor personeel Amsterdam UMC populair: "Anders nog lang doorgerommeld"
Felicia Yarde on AT5

Zwangerschap en HIV "Jij was mijn lifeline"
Liesbeth van Leeuwen in Hello Gorgeous – Hello Queen magazine

Justus Kuijer (35) gaat door het leven met een ongeneeslijke spierziekte. Hij hoopt op verruiming van de Embryowet
Martina Cornel in newspaper Trouw

Doorbraak in embryo-onderzoek: werkende eicel gemaakt uit huidcel
Sebastiaan Mastenbroek on NOS Nieuwsuur

'Twee-eiige tweelingen komen opvallend veel vaker voor in Afrika dan Europa'
Nikki Hubers in newspaper NRC

Newly appointed professors

In 2025, one professor was appointed at Amsterdam UMC in the field of AR&D.

Lotte Haverman

PROF. LOTTE HAVERMAN

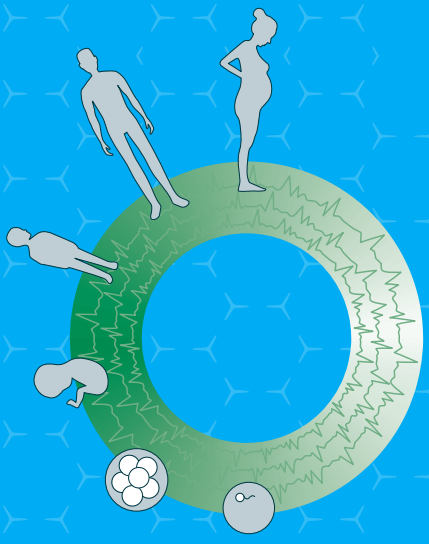
A medical condition and medical treatment affect people in more ways than just medically. In addition to physical complaints, many patients experience psychological consequences; such as depression, anxiety, and limitations in their social life, work, or school, argues Lotte Haverman in her inaugural lecture. Family members and caregivers are also affected: e.g. parents of children with a chronic condition can develop long-term stress symptoms or even develop a post-traumatic stress disorder (PTSD). Unfortunately, these consequences often remain insufficiently recognized within medical healthcare, which can unnecessarily worsen problems and hinder effective medical treatment.

To fully understand what illness means in daily life, it is essential to systematically assess patients' and families' experiences regarding their physical, mental, and social functioning. Patient-reported outcome measures (PROMs) – validated questionnaires completed by patients themselves – provide a structured and reliable way to capture these outcomes. Advances in measurement science, such as item response theory–based instruments like PROMIS item banks, allow outcomes to be measured more precisely and efficiently. Through Computer Adaptive Tests (CATs), reliable estimates of patient well-being can be obtained with only a limited number of questions.

Within developments such as value-based healthcare, Uitkomstgerichte zorg, and Passende Zorg, increasing emphasis is placed on outcomes that are meaningful to patients, PROMs therefore play a central role. PROMs are playing an increasingly important role in this. Their routine use in clinical practice helps healthcare professionals identify concerns that might otherwise remain unspoken, and research demonstrates positive effects on communication, patient satisfaction, and quality of life.

Despite these benefits, PROMs remain underutilized in routine healthcare. Continued scientific development and implementation research are needed to overcome existing barriers, make the broader impact of a medical condition visible in domains that matter to patients, and ensure that appropriate support can be provided in a timely manner.

“The ambition of AR&D is the advancement of knowledge in all aspects of human reproduction and development through interdisciplinary team science aimed at improving health from preconception to adulthood of current and future generations.”



"Unique about the research institute Amsterdam Reproduction & Development is that we pay attention to reproduction and development in its totality: the stage before pregnancy, conception, pregnancy, childbirth, the child as it's growing up, and the resulting health of the adult stages of life"